EFFECTS OF TWO – DIMENSIONAL MEDIA AND CONVENTIONAL METHOD OF TEACHING ON STUDENTS' PERFORMANCE IN AGRICULTURAL SCIENCE IN SECONDARY SCHOOLS IN ZARIA, KADUNA, NIGERIA

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A DISSERTATION SUBMTTED TO THE DEPARTMENT OF EDUCATIONAL FOUNDATIONS AND CURRICULUM,
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DEPARTMENT OF EDUCATIONAL FOUNDATIONS AND CURRICULUM,
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AHMADU BELLO UNIVERSITY,
ZARIA

MARCH, 2015

DECLARATION

I hereby declare that the work in this Dissertation entitled "Effect of Two- dimensional media and Conventional Methods of Teaching on Students' Performance in Agricultural Science in Secondary Schools in Zaria, Kaduna State." has been performed by me in the department of education foundation and curriculum under the supervision of Dr. B. Maina and Dr. M.O. Dare. The information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this thesis was previously presented for another degree or diploma at any university.

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Mahmud Bello ABDULLAHI Date

CERTIFICATION

This Dissertation titled "Effect of Two- dimensional media and Conventional Methods of Teaching on Students' Performance in Agricultural Science in Secondary Schools in Zaria, Kaduna State" by Mahmud Bello ABDULLAHI meets the regulations governing the award of the degree of Masters in Instruction Technology, in the Department of Education Foundation and Curriculum, Ahmadu Bello University, Zaria and is approved for its contribution to knowledge.

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DEDICATION

This research work is dedicated to my parents Alhaji Abdullahi Bello and Hajia Nafisatu Usman and also to my late sisters Lubabatu Abdullahi Bello and Aishatu Abdullahi Bello

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OPERATIONAL DEFINITION OF TERMS

Control group: students that are involved in the study who received treatment using conventional teaching method only.

Experimental group: Students involved in the study who received treatment using teaching methods with Two-dimensional media.

Conventional teaching method: Classroom instruction that is based on lecturing, recitation and reading assignments.

Two-dimensional media: They are photographic and non-photographic materials, designed to communicate a massage to the learners. They may incorporate pictures, symbolic visual and verbal cues. Example includes; pictures, drawings, charts graphs, posters, among others.

Rural Schools: These are schools which are located in sparsely populated area outside of the limits of a city or town or a designated commercial, industrial or residential center and are also characterized by farms, vegetation or open spaces.

Urban Schools: These are schools which are located in densely populated area, within the city, town, and a designated commercial, industrial or residential center.

LIST OF ABBREVIATIONS

APT: **Academic Performance Test**

TDMAPT: **Two-Dimensional media Academic Performance Test**

ABSTRACT

This study is titled'Effect of Two-Dimensional Media and Conventional Methods of Teaching on Students' Performance in Agricultural Science in Secondary Schools in Zaria'. The study aimed at finding out if two-dimensional media when utilized in teaching will improve students' academic performance. Related literatures were reviewed based on the issues raised in the objectives. The research designed used was Quasi-experimental design. A total of One Hundred(100) SSS I students were tested out of the population of Eighteen Thousand One Hundred and Thirty Eight (18,138) Students, in Twenty Four Government Secondary Schools in Zaria Educational Zone, Kaduna State. Four schools were selected in which two served as experimental and other two schools as control group. Twenty-five students were selected in each school in which fifty students fall on the experimental group and the other fifty on control group. The samples were tested on simple farm tools, farm machinery and implements, survey and planning of farm stead, using academic performance test (APT) as test instrument. Four null hypotheses were formulated, tested and analyzed using Statistical Package for Social Sciences (SPSS) and paired sample t-test. The findings from the study shows that null hypotheses one and two were rejected on the experimental group at 5% level of significance, while the null hypotheses three and four were accepted on control group of rural and urban students in the study area. Result from the findings revealed that there was significant difference between the test- re -test result of the experimental group with higher mean score of 62.5,66.2 and 47.0,53.9 while the control groups result taught with conventional method shows no difference in their mean score of31.0,31.0in hypotheses three and 40.0,40.2 in hypotheses four respectively. The two-dimensional media were found to be effective in teaching Agricultural Science. It is, therefore, recommended that efforts need to be made by government, curriculum planners, teachers, parents and all stakeholders involved in providing and improvising instructional media in teaching.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

It is a pertinent fact that agriculture has played a very significant role in man's civilization. Products such as food, fiber, fuel, raw materials for drugs and many assorted product come from agriculture. Many nations' economy has depended on agriculture. For instance, Nigeria in the early 1960s before the 'Oil boom' depended on agriculture for her economic sustenance. It is the invaluable contributions of the agriculture to our nation that engendered our educationists and government to make provision in the National Policy on Education for practical agriculture in the curriculum of the Senior and Junior Secondary Schools as a core subject (FGN, 1990). Inspite of efforts made to promote agriculture in this wise, its impact is yet to be felt in total. The West African Examination Council and the National Examinations Council, the major examination bodies in Nigeria have been recording poor results from candidates who sit for the examinations on agricultural science. Besides, the enrollment for the examination in agricultural science is on the decline (Bassey,2011). The stakeholders and many more could attribute this to poor methods of teaching, poor implementation of Educational Policies.

According to Ezewu (2007), asserted that government, manufacturers and parents have exhibited concern about the quality of Education that have been acquired by their wards. It is the level and quality of an individual's education that is used as parameter to measure and predict the contribution that the individual makes to the society. The effect of what one learns should be seen in the individual, his environment and the society at large. Learning agricultural science, techniques and acquiring skills through various

practicalscarried out in the class and school farms are the basis for this knowledge gained. According to Isangedighi (2007), exposure to training is important if learning must take place.

Learning is refer to as any relatively permanent change in behavior, interpretation or emotional response because of previous experience. Similarly, learning can be defined as a change in behavior or performance which is as a result of experience and practice and which makes individual face later situations differently (Danga,2002). Furthermore, the true test of learning can be seen in the positive improvement of the learner towards a given task. Thus, an individual is assuming to have learnt techniques and skills if there is a remarkable change in his academic performance during and after the course of his study.It can be said that the success of an educational programme can be measured about degree with which its beneficiaries perform academically. Myriad of factors have been known to influence the academic achievement of students in their various school endeavors (Bassey,2011). These factors can either be personal (poor self-concept, motives, readiness, emotions, attitudes and maturational level of the students) or environmental. Studies have identified allied factors such as students' individual differences (personal causal factors), teaching learning strategy (system causal factors), family causal factors and the teacher (academic causal factors) to interfere with the performance level of the students. This research work will focus mostly on the teaching / learning strategy (system causal factors). The rate of failure in the public examinations has persistently increased and this has attracted the attention of many stakeholders involved. The belief is that no nation can develop scientifically and technologically without quantitative and qualitative educational system (Alao, 1990).

According to Ogogan (1997), Sight and hearing are the two senses used in most human teaching and learning activities. These senses receive primary consideration in the selection and development of instructional media. The five senses used in teaching and learning include kinesthetic (touch), gestulatory (taste), olfactory (smell), auditory (hearing) and optical (seeing), Aliyu (2001) in Awolola (2004). When these senses are integrated or employed during classroom teaching and learning process, the communication becomes effective. The use of educational media in teaching and learning process is aimed at maximizing the employment of these five senses in classroom communication. Instructional media also promotes effective understanding of the message that is being communicated.The National Policy on Education (NPE,2004), under educational service section 10, has objectives among others to improve learning and the competence of teachers and make learning more meaningful for children. According to the policy, the application of educational technology develops and promotes an effective use of innovative materials in classroom. There are several types of instructional media depending on what to teach, where to teach and the availability of instructional media in that environment. According to Abimbade (1997), instructional media can be classified into three categories: these are non print media, print media and electronic media. The non print media are the projected materials such as films, slides, film strips, while printed materials are books, texts, maps, journals and electronic media which consist of visual, audio and audio visual that rely on electricity to function effectively. All these and many more stimulate the sense of observation in learners. The foundation for the use of instructional media in the school system is to transmit information in the teaching and learning process. Instructional media according to Ajelabi (2000), refers to broad range of

information carrying resources that constitute an integral component of classroom teaching and learning and are utilized in an instructional process with the hope of facilitating effective and efficient communication in teaching and learning process. That is, instructional media are those materials or objects that help the teacher in making the learning more interesting to the learner.

Abimbade (1997), reported that using instructional media in teaching and learning makes students learn more and retain better what they have been taught and that it also promotes and sustains students' interests. It also allows the learners to discover themselves and their abilities. Instructional media enrich learners' knowledge and reinforce verbal instruction (Ajelabi, 2000). Therefore, when instructional media are used, there is tendency to make classroom environment lively and more interesting.

1.2 Statement of the Problem

When educational policy was review to the 6-3-3-4 system of education in the 1980s, a great deal of prominence was given to the study of agricultural science in the Secondary School Curriculum. However, the objectives of studying agricultural science in primary/post primary schools which among others include: exposing students to gain opportunities in the field of agriculture seems to have been defeated because majority of students openly reject the subject with belief that it is meant for their grandfathers (Agbulu and Olaitan, 2002; Agbulu and Ekele, 2004).

According to (Agbulu and Olaitan, 2002), this apathy towards agricultural science as a profession by the younger generation may continue with advent of high technology where emphasis is being shifted to information and communication technology. If this trend is allowed to continue, achieving the millennium development goals (MDGs),

especially MDG I upon which all other MDGs depend may just be a dream. This is a serious challenge to agricultural science teachers at all levels of education and other stakeholders.

Olaitan (1991), states that 'if economic development in Nigeria is to be successful and sustained, agricultural science education among the youths should be established and pursued vigourously'. This can only be realized if teachers of agricultural science in our schools employ a more pragmatic approach to produce the required manpower in the agricultural sector. Food and Agricultural Organization (FAO), (2003), noted that agricultural development will be engine room for fighting malnutrition and poverty, and for overall economic expansion. Such advances, however, must be achieved through functional agricultural science education that will stimulate interest in Agriculture at all levels of education thereby producing literates, able bodied and skillful young and productive manpower to increase agricultural production, reduce unemployment, extreme poverty and hunger.

Similarly, according to the Nigerian Millennium Development Goals reports (2005), the school performance level in Nigeria has gradually deteriorated, especially between the age group 15-24 who will be the working force of the nation in the near future. Bonwell and Eison (1999), affirmed that the problem of poor school performance was generally caused by poor method of teaching in schools. It is always the conventional teaching methods (i.e. verbal communication and chalkboard method of instruction). This shows lack of appropriate and adequate application of education technology that could bring about maximum and effective teaching and learning process. This problem raises many questions by concerned citizens and the society. The problem has been attributed to

the government and the people that are running the affairs of the educational system. This is because government made a lot of promises to improve the sector over the years, however, the negligence and the poor implementation of the government policies have contributed to the low standard of education. The teachers have also been blamed because it is often said that they are not professionally qualified and do not use modern innovation of instructional media for delivery of the subject matter (Mezieobi, 2000).Commenting on the attitude of Government to education, Ali (2007), said that the nation fails to improve the school standard in many decades with qualified and trained teachers, necessary teaching materials and its indiscriminate establishment of schools have caused very poor academic performance.

The basic concept to employ in teaching agricultural science hinges on the methodology or approach used in teaching agricultural science. Although, it is an established fact that, no single method or approach is regarded as the best for every teaching situation. Kolo (2007), observes that most of the present crops of agricultural science teachers in our primary and secondary schools encounter pedagogical difficulties because of wrong method of approaches of teaching. Teachers of agricultural science still stick to those antiquated teaching methods where undue emphasis is laid on theory to the detriment of practical that is supposed to equip students with basic skills and knowledge. This, no doubt contributes greatly to the present lack of interest in agriculture by students, which is evident in the low level of enrolment in agriculture, and agricultural related disciplines at all levels of education each year (Kolo, 2007).

It is in view of these problems that this study examined whether or not effective utilization of instructional media with emphasis on two dimensional- media utilization

could enhance students' academic performance in Agricultural Science in Secondary Schools in Zaria, Kaduna State.

1.3 Objectives of the Study

The main objectives of the study are to:

1. determine students' performance usingtwo-dimensional media in teaching Agricultural science in selected rural secondary schools in Zaria Education Zone; Kaduna State;
2. examine students' performance using two-dimensional media in teaching agricultural science in selected urban secondary schools in Zaria Education Zone, Kaduna State;
3. assess the students' performance using conventional method in teaching Agricultural Science in selected rural Secondary Schools in Zaria Education Zone; Kaduna State; and
4. to find out students' performance using conventional method in teaching Agricultural Science in selected urban Secondary Schools in Zaria Education Zone; Kaduna State.

1.4 Research Questions

The following research questions were askedto guide the study:

i. Is there difference in the meanscores of pre-test and post-test results of students taught Agricultural Science using two- dimensional media in selected rural secondary schools in Zaria Education Zone, Kaduna State?

ii. What is the difference in the mean scores of pre-test and post-test results of students taught Agricultural Science using two-dimensional media in selected urban secondary schools in Zaria Education Zone, Kaduna State?

iii. Will the meanscores of pre-test and post-test results of students differ, taught Agricultural science using conventional methods in selected rural secondary schools in Zaria Education Zone, Kaduna State?

iv. What is the difference in the meanscores of pre-test and post-test results of students taught Agricultural science using conventional methods in selected urban secondary schools in Zaria Education Zone, Kaduna State?

1.5 Hypotheses

The following null hypotheses were formulated to guide the study:

i. There is no significant difference in the mean scores of pre-test and post-test results of students taught agricultural science using two-dimensional media in selected rural secondary schools in Zaria, Kaduna State.

ii. There is no significant difference in the mean scores of pre-test and post-test results of students taught agricultural science using two-dimensional media in selected urban secondary schools in Zaria, Kaduna State.

iii. There is no significant difference in the mean scores of pre-test and post-test results of students taught agricultural science using conventional method in selected rural secondary schools in Zaria, Kaduna State.

iv. There is no significant difference in the mean scores of pre-test and post-test results of students taught agricultural science using conventional method in selected urban secondary schools in Zaria, Kaduna State.

1.6 Basic Assumptions

The study was formed by the assumptions that:

i. Students taught with two-dimensional media method of teaching Agricultural Science in secondary schools will perform better than those taught with conventional media method.

ii. The students in the study that weresampled have the same exposure to the agricultural science concept through the same method of teaching but are not exposed to two-dimensional media.

iii. The use of instructional media like two-dimensional media object in teaching agricultural science subject will improve students' performance, compared with conventional teaching method in both rural and urban secondary schools of Zaria Education Zone, Kaduna State.

iv. The students' performance when taught agricultural science with conventional method will not improve, both in rural and urban secondary schools of Zaria Education Zone, Kaduna State.

1.7 Significance of the Study

Instructional resources that are educational inputs are of vital importance to the teaching of any subject in the school curriculum. Walles (1975), was of the opinion that the use of instructional resources will make discovers facts glued firmly to the memory of students. It is in this regard that this study acknowledges its importance to teachers, curriculum planners, parents, students, government and other stakeholders concerned.

i. This study will help the students to appreciate and have interest towards learning the subject matter. Similarly, students learning which lack teaching resources cannot be effective.

ii. This study will also help the parents to appreciate the value of instructional media in teaching and learning, so that the parents can provide or improvise learning materials (media) for their children.

iii. Study like this will also help the parents, curriculum planners, government and all the stakeholders involved, to know the impact or importance of educational media on student performance.

iv. This study will also serve as a reference material for those who may wish to embark on similar research work.

v. To the teachers, they are for easy impacting knowledge to the students and easy understanding of what has been taught. They will also help teachers to make sure that appropriate and relevant educational media are selected carefully and used for clarification of difficult concepts.

1.8 Scope of the Study

This research work was limited to only fourgovernment secondary schools in Zaria Education Zone, Kaduna state. This is because of the research design that was used for the study. The four schools are selected through random sampling using geographical locations of the schools. Twenty five (25) Senior Secondary School students of each selected schoolsare used for the study, making theonehundred (100) respondents. Thus, the instructional media used for the study was limited to two dimensional media and conventional methodin teaching

agricultural science. The respondent of this research work were limited to student offering agricultural science.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This Chapter reviewed the following:

- Introduction
- Theoretical Frame work
- Meaning of Performance
- Meaning of two dimensional media
- Meaning of Conventional Teaching Method
- Meaning of Teaching
- Using Two dimensional in Teaching
- Using Conventional method in teaching
- Students Performance in Agric Science in Rural Schools
- Students Performance in Agric Science in Urban Schools
- Empirical Studies
- Summary

2.1 Introduction

This chapter reviews related literature with focus on the works of other scholars, views, opinions and perceptions related to this topic with the view to putting this study in proper context.According to Seek and Richey (1994) Media utilization is the systemic use of resource for learning. It is the backbone of any successful teaching. Any teaching that is devoid of instructional materials is boundto be in fiasco. A wise saying asserts that, "what I hear I forget, what I seeI remember and what I do I understand."

Kindler (1970)maintained that "students remember 10% of what they read, 20% of what hear, 30% 0f what they see, 70% of what they say and 90% of what theyhear,say and do. Other scholars like Hagban (1990) and Dela (1992) maintained that audio-visual materials when properly used, supply concrete basis for conceptual thinking have high degree of interest for students, make learning more permanent and offer a reality and variety of experience.Scholars, like Hewkridge (1992) and Packman (1990) had conducted many researches on the effect of instructional television programmed instructions and films on students'performance. As expected the findings shows a positive correlation between the use of these materials and student performance. The National Council for Education Technology (1997) asserted that the use of computer in class roomteaching has lead to a considerable increase in student performance.

Thus, literature consulted is in journals, textbooks, newspapers, government documents, internet files. The chapter among other things include theoretical framework, concept of academic performance, factors influencing students' performance, various teaching methods, concepts of two-dimensional media, conventional teaching methods, empirical studies and summary.The desire to achieve rapid development by the successive Nigerian government lead to the establishment of many schools at various levels. Many of these schools were improperly equipped for effective instruction and learning, most classrooms do not have the necessary facilities needed for teaching and learning of agricultural science. According to Akinjidi (1997), essential instructional material are not available for use in classrooms and in workshops, learning is made difficult, skills acquisition discouraged and the student are not given adequate motivation through teachings. Consequently, teachers do not impart the knowledge that is relevant to the

innovation in the industries for which these students are being prepared. The teacher therefore ends up teaching the history of technical education. Due to these problems, the researcher tries to analyze the students' performance comparing two dimensional media and conventional methods in teaching agricultural science in selected secondary schools in Zariametropolis, Kaduna State.

2.2 TheoreticalFramework

The philosophical thought germane to agricultural education generally is pragmatism. In the pragmatic view, education is a tool for solving individual problems, and as individuals improve in skills acquisition, education and income status, his society is also improved. The central aim of education is to teach people to think rationally, independently and learn to live intelligently. As a theory, pragmatism has had far-reaching impact because knowledge is valuable only if it provides data in the problem solving process without sacrificing self-disciplineand individual differences (Daley, 1985). Pragmatism postulates that the universe is dynamic and evolving; truth is relative and based on experience. Education should be student centered, directed towards solving problems to create new social order (Daley 1985).

The theory is relevant to this study because the act of teaching involves skills which are acquired and developed through training, practice and experience. Teacher certificationand teaching standards should be maintained, teaching is an observable behavior and human beings can control their own destiny towards potential growth and development. The fulcrum of educational lever is theteacher; he is seen and described as the fundamental manager of the students, their learning activities and the school educational resources. These are the many functions conceived in the process of

management (planning, leading, organizing, coordinating, directing, supervising, controlling, evaluating and reporting) and they are interrelated and independent.

The teacher should therefore be well grounded in the rudiments and application of the theories and practice of school management through relevant training, certification and educational qualification. Adu and Olatundun (2007) pointed out that the role of the teacher is of paramount importance in education system. He is the custodian of knowledge and instructor of instruction.Also,Sizer (2007) reported that successful teaching rest on character and integrity of the teacher.

The classroomis the focal point for teaching and learning, and it is accepted that the teacher is the most important factor amongst all the factors in the teaching and learning process (Rushton, Morgan & Richard 2006). The primary role of the agricultural science teacher therefore, has always been to help students acquire knowledge and skills in agriculture. A competent teacher is essential for a successful agricultural science education program. This concept implies that the teacher must have sufficient training and expertise in the field of agriculture as well as skill. In imparting knowledge and facilitating learning.The teacher as human resource should have a unique personality, character and attitudes to exercise a wholesome and inspiring influence on students. Teachers constitute a strategic factor in education system. They determine to a very large extent, the smooth functioning of any educational system, their availability and adequacy influence efficiency and productivity. This is why Imig and Imig (2006) wanted teachers to possess external elements of skills and internal element of insight and resourcefulness.

The characteristics of effective teaching are not mysterious or extremely discipline specific. They do not support the belief about teaching that "Good teachers are born, not made." They can, and have been identified by researches, students, and inspectors and so on and teachers who exhibit those qualities most consistently state that they worth hard of attaining them and are very conscious of their actions and their effects (Kitchel&Torres, 2006).

With another sample of prospective teachers in Italy, Santageta,Zannoni and stigher (in press) reported that attention to teaching analysis skills of teaching resulted in significant growth, over a few months, in participants' analysis performance. Teachers who display good analytic skills generated recommendations for revising the lesson thatwere judged to improve students' learning opportunities. So, teachers should continue to explore and test their skills of analyzing teaching to apply them under appropriate conditions.

2.2.1 Meaning of Performance

Academic performance or academic achievement is the outcome of education the extent to which a student, teacher or institution has achieved their educational goals (Murry 1996). Kathrine (2007) has defined academic achievement or performance, as the educational goal that is achieved by a student, teacher or institution achieves over a certain period. This is measuredby either examinations or continuous assessments and the goal may differ from an individual or institution to another. Academic performance was also definedby Tomas (2011) as a term used in school when a student does well in academics. They achieve or do well in an area of school and do well in their studies.

Academic performance is commonly measured by examinations or continuous assessment but there is no general agreement on how it is best tested of which aspects are most important procedural knowledge such as skills or declarative knowledge such as fact Annie ward, *et al* (1996). In California, the achievement of schools is measured by theacademic performance index.

Academic performance has been described as the scholastic standing of a student at a given moment. Thisscholastic standing could be explainedin terms of the grades obtainedin a course or groups of courses (Danielsand Schoulen, 1970). Simkins (1981) commented on this scholastic standing and argued that performance is ameasure of output and that the main outputs in education are expressed in terms of learning, that is, changes inknowledge, skills and attitudes of individuals as a result of their experiences within thesystem. STAN,(1992) supported this argument and reported that performance is the level of attainment of a person in anexamination, that is, how an individual is able to demonstrate his or her abilities in an examination. Noting this point, Al-Shorayye (1995) regarded a student's performance in an examination as being depended on his cumulative grade point average. His argument supported Entwistle and' Wilson's (1977) assertion that a student's success is generally judged by examination performance while the best criterion of performance is the sum of the student's academic performance in all the subjects taken. Researchers had deliberated much on performance as a measure of school output (Blaug and Woodhall, 1968; Adeyemi, 1998; Bandele, 2001). Blaug and Woodhall (1968), for instance, argued that the only measure of performance of school leavers is the attainment in GCE examinations. Consequently, they measured output in terms of the number of school leavers weighted by different indices of quality or number of passes and reported

that performance in GCE is one relevant criterionof educational quality and that 'academic index' measures output in terms of GCE results.

The pattern of grading students in the Junior Secondary Certificate (JSC) and the Senior Secondary Certificate (SSC) examinations in Nigeria is such that the distinction grade is being represented by A1 to B3. The credit grade is represented by C4 to C6. The ordinary pass grade is represented by D7 and E8 while the failure grade is represented by F9 (Ondo State Ministry of Education, 1994; Ekiti State Ministry of Education, 1997; WAEC, 2006). It needs to be mentioned however, that the distinction and credit grades are the only requisite grades for admissions into Nigerian universities and candidates must have at least credits in five subjects includingEnglish Language in order to qualify for admission (JAMB, 2007).

2.2.2 Meaning of Two-Dimensional Media

The real world is three-dimensional. Yet inherent limitation of textbooks and computer screens required students to experience many scientific objects as two-dimensional (2D) i.e “flat”. This can lead to student conceptions of three-dimensional (3D) objects based on inaccurate and over simplified representations (Marr & Nishihara 1978).

a. **Graphic Materials:** They are non-photographic two-dimensional materials designed to communicate a massage to the learners. They may incorporate symbolic visual and verbal cues. Graphic media include drawings, charts graphs, posters, among others. Drawings are more finished and representational arrangement of lives to represents persons, places, things and concepts. Charts are abstract representation of abstract relationships, like tabular chart, time line and classification charts. Graphs are visual

representation of numerical data, like pocal graphs, scatter graph, line graph and so on. Graphs are useful for teachers in subject like economics, geography, and mathematics posters are also useful graphic media using combination of lines colour and texts. Cartoons are line drawings that can be used to encourage students and enliven instruction. Flip charts and well chart can be used as speakers support and they point reference. They should be designed in a way to ensure that they are large and short in content.

b. **Still Pictures:** They are non-projected, non-motion pictures in opaque form. They are photography representation of people places or things, and can be used to present information in all subject areas. Still pictures are readily available for resourceful teachers, in magazine, calendars, illustrations from textbooks, newspapers and so on. When still pictures are properly mounted in cardboard, with proper edges, as individual pictures to produce a single visual, they can be used to pass across wide range of information (Kemp &Smellie, 1989 and Wittich&Schuller, 1973).

2.2.3 Meaning of Conventional Teaching Method

The definition of conventional method of teaching is closely related to traditional education and it varies greatly with geography and by historical period. The chief business of conventional method of teaching is to transmit to a next generation those skills, facts, and standards of moral and social conduct that adults deem to be necessary for the next generations material and social success. Dewey (1938).

As beneficiaries of this scheme, which educational progressivism John Dewey described as being "imposed from above and from outside," the students are expected to

docilely and obediently receive and believe the fixed answers. Teachers are the instruments by which this knowledge is communicated and these standards of behavior are enforced (Dewey, 1938).

Historically, the primary educational technique of traditional education was simple oral recitation or story telling Beck (2009). In a typical approach, students sat quietly at their places and listened to one student after another recite his or has lesson, until each had been called upon. The teacher's primary activity was assigning and listening to these recitations; students studied and memorized the assignment at home. A test or oral examination might be given at the end of a unit, and the process, which was called "assignment-study-recitation-test" was repeated. In addition to its over emphasis on verbal answers, reliance on rote memorization (memorization with no effort at understanding the meaning), this traditional method also insisted that all students be taught the same materials at the same point; student that did not learn quickly enough failed. Lecture methods, storytelling and discussion method of teaching all fall under conventional methods of teaching

2.2.4 Meaning of Teaching

Abimbola(2009), defined teaching as process of facilitating student learning through a proper management, by the teacher of interrelationships among the students' interest, the content for learning, and the method and materials he or she intend to use in the teaching and learning of the content materials. It may involve giving instruction to somebody on knowledge, skills and attitude with the intention that the person will be able to know the information or do something, or act in a particular way that is compatible with the instruction. The person that gives the instruction is the teacher or instructor and the

person receiving the instruction may be a leaner, a pupil, a student or a trainee. The means employed by the teacher is to pass information to the learner would determine ultimately, if he or she is teaching, instructing training indoctrinating and so forth.

Teaching according to Abdullahi(2012), is an activity which involves training, indoctrinating, conducting, instructing and imparting knowledge to the learner. Teaching can be carried out in many ways and procedures. Teaching includes all the activities of providing education to others. The teacher uses different methods for giving best knowledge to his students. He tries his best to make his students understand. His duty is to encourage students to learn the subjects. Teaching means interaction of teacher and students to share ideas, knowledge, skills and beliefs. Many great teachers of world define teaching in different ways and we can say that teaching is just to train the students so that they can stand on their own foot in the society. In teaching three main aspect comes in our front first is the teacher, second the student and third is educationmain characteristics of teaching is to provide guidance and training, the following are also some of the characteristics:

i. Teaching is an interaction between teacher and students
ii. Teaching is an art to give knowledge to students with effective way.
iii. Teaching is science to educate fact and causes of different topics of different subject.
iv. Teaching is acontinuous process.
v. Teaching encourages students to learn more and more.
vi. Teaching is formal as well as informal.

vii. Teaching is communication of information to students. In teaching, teacher impart information in interesting way so that students can easily understand the information.

Teaching is a tool to help student to adjust himself in his environment and society at large.

2.3 Using Two-Dimensional Media in Teaching

While the instructional value of media in enriching the teaching of students by teachers cannot be doubted, media in themselves cannot assure good teaching. Their effective use can be through the integration of media in teaching by teachers. The following guidelines can be followed to ensure successful integration of media in teaching (Blyth-Lord, 1991, Farrant, 1981, and Michealis, 1975).

i. A teacher should consider the entire school environment as a laboratory for students' learning and the practical application of his/her knowledge. Therefore, instructional media selection, arrangement and re-arrangement of learning environment, and the use of materials and equipment to promote learning are basic in self-contained classroom.
ii. The entire neighborhood of the school and community resources should be viewed and utilized as a laboratory for student learning.
iii. Media should be designed, produced, selected, or used as resources to attain specific instructional objectives. That is, objectives should not be tailored to the media, rather, objectives should guide media utilization.
iv. Media to be used by a teacher should be considered in terms of concreteness or abstractness of experience which the media would produce. Teachers should be

sensitive to the changing situation within the classroom and have alternative media to meet individual differences of the learners.

v. Media should be selected for instructional purpose based on specific criteria which are directly related to instructional planning. These include: (i) the nature of the audience, in terms of chronological age, sex social, cultural, environmental, and economic background of the learners, (ii) entry level, (iii) motivation, (iv) the physical abilities or disabilities of learners, (v) learners long-established perception and cultural characteristics, (vi) the objectives to be achieved (whether cognitive, affective or psychomotor), (vii) nature of the subject content, (viii) physical qualities of the media, that is, the attributes, authenticity and significance of the content, (ix) cost of the media, (x) expected role of students, and (xi) the mode of instruction among others.

vi. Instructional media should be utilized in the content of a variety of teaching strategies. Use of resources should be observed and guided. The possibility of using multi-media should be considered. This is because a single media may not be adequate to achieve all the objectives outlined for a lesson.

vii. Media utilization should require learners' response. Thus, when designing any media, the teacher should build into the programme things that will ensure learners' participation, through discussion, project, dramatization, and so on.

viii. Evaluating the use of media can be done through observation, individual project, and use of questionnaire. The information from the evaluation can be used to improve on media usage in subsequent lesson.

2.4 Using Conventional Method in Teaching

According to Abimbola(2009), conventional teaching method like lecture method has advantages, disadvantages and guidelines for it proper utilization. According to him it is a good strategy for teaching large classes especially these days of large enrolment of students in the class. Even though he pointed out that conventional teaching method does not take care of individual differences,as it a poor strategy for teaching poor ability students who may not be able to follow simple logical reasoning. He pointed out some guide to be followed while using the method:

- Whenever the teacher uses this method, the student should be well involved, they should be allowed to ask question, answer questions and summarize the major points of the lesson.
- The teacher should use as many strategies as possible in a lesson so as not to allow the method to be the only strategy in the lesson.
- The teacher should try not to do too much in a lesson to avoid confusing the students.

2.5 Students Performance in Agric Science in Rural Schools

The rural-urban divide problem is extended and experienced within the education sector. There is glaring inequity in terms of resourcing of schools, infrastructure and other facilities. Communities and schools in rural areas have to contend with the scarcity and lack of adequate resources, for example lack of running water, electricity, sanitation, communication and dilapidated buildings. Availability of libraries and laboratories is also still a wide spread problem for schools in rural areas (Human Science Research Council[HSRC]1997).

In rural areas, both learners and teachers, in most instances, have to travel longer distances to get to school. The likelihood that some learners may come to school without having had something to eat is also high, giving the high levels of poverty in rural areas.The Globalization in Education Report (DoE, 2000b) attests to these problems in that the historical inequities in education have given rise to internal inefficiencies and unequal educational outcomes (performance).

A study conducted by Howie (2000) found that within the school level factors (school location), the location of the school had a significant effect on students performance. Students in rural schools achieved significantly lower scores than those in the urban areas.Another study, conducted by Young(1997), found that Australian students in rural areas also achieved lower scores in mathematics and other science subjects. Howie(2002) asserted that it was not surprising giving the remarks made by Hofmeyer and Buckland (1992) that African children in rural areas are educationally more disadvantage than those in the urban areas.Boylan and Mcswan (1978) reported that rural schools were inferior and lacking in range of facilities with low staff turnover and suffer from lack of continuity in their curriculum. Base on the above reason according to the researcher it will beagreed that the performance of agricultural science students in the rural areas is low compared to their rural counterparts.

2.6 Students Performance in Agric Science in Urban Schools

Obe (1984) observed that significant difference in rural- urban academic performance of four hundred and eighty (480) primary six-schoolfinalists on aptitude sub-test of National Common Entrance Examination into secondary schools. He concluded that children from urban schools were superior to their rural counterparts. Owoeye(2002) holds

similar view as Obe that, there was a significant difference between academic performance of students in rural and urban area in public examinations.

Ajayi and Ogunyemi(1990) and Gana(1997) in their different studies on the relationship between academic performance and school location revealed that, there was no significant difference between academic performance of students in urban and rural schools. Also Ajayi(1999) found out that, there was significant difference between students academic achievement of rural and urban secondary school students

2.7 Empirical Studies

Studies have been conducted by Dr. A AUdoh and Okoli Mercy(2011), on comparative study of effectiveness of three instructional methods in teaching financial accounting in secondary schools in Gombe State. The purpose of the study was to compare the effectiveness of three instructional methods (problem solving, teacher-demonstration and conventional methods) on students' performance in financial accounting in secondary schools in Gombe state.Experimental research designed was adopted for the study. The population of the students in the eleven public secondary schools offering financial accounting in Gombe State was 1753. Three schools were purposely selected for the experimental study out of the eleven schools offering accounting in the state, from which ninety students were randomly selected as sample. The sample comprised of thirty students made up of fifteen boys and fifteen girls from each of the three secondary schools selected for the study. The three students groups were labeled Experimental group one, two and control group taught using Problem-solving method, Teacher-demonstration method and conventional method respectively. The data collected were analyzed using mean and standard deviation (SD) to answer the research question and analysis of variance

(ANOVA) and LSD post Hoc multiple comparison test to test the null hypothesis at 0.05 level of significance. The findings of the study revealed that student taught using Teacher-demonstration method had higher mean performance followed by those taught using problem-solving method and the least performed group were those taught using conventional method. The researcher therefore concludes that the use of teacher-demonstration and problem-solving methods can improve students' performance in financial accounting in public secondary schools in Gombe state. Recommendations based on the findings include among others that: Financial Accounting teachers should intensify effort in the use of Teacher-demonstration-method, also student should be encourage to participate in the teaching and learning process hence the need for problem-solving method. This research is similar to this work which shows that the use of instructional material in teaching and learning process improve student performance compared to conventional method of teaching.

Another research on the study investigated scaffolding instructional technique as predictor of learners academic performance in integrated science conducted by Ogunseemi (2001). A total number of 160 students were randomly selected and assigned to four groups that include two experiment and two control groups respectively. From four randomly selected junior secondary school in Ikere Local Government Area of Ekiti State. The subjects were giving different treatment for four weeks that is, Scaffolding Instructional Technique (SIT) for experiment and chalk and talk method of teaching (C&T) for control groups. The result of the analysis of covariance (ANOVA) shows significant difference in treatment condition. The result showed that student who were taught using scaffolding instructional technique performed better than their counterparts taught with

usual chalk and talk method only. This is also similar to this research which shows conventional method is the least method of teaching towards improving students' academic performance.

Another research by Dr..P.NUzoma and Ugorji (2000) on the effect of two approaches in teaching solid shapes on students' achievements in junior secondary school mathematics. The study sample consisted of 200 junior secondary school year two (JSS2) students from Awo-Omamna,Oru-East Local Government Area of Imo State. This is an experimental research and the design adopted was pre-test-post-test group design with ANCOVA as a post hoc control. The data collected were analyzed using Analysis of covariance. The hypothesis was tested using ANCOVA F-ratio at p 0.05 level of significance. The findings of this study revealed that the mean score of rural student taught solid shapes using charts, pictures and models does not differ significantly from that of their urban counterpart taught solid shapes using charts, pictures and models. Based on the findings the researcher recommended that mathematics teachers should use either charts, pictures or models in teaching their students. This is also similar to this research, which shows that the use of pictures charts and models in teaching helps to improve students' academic performance.

2.8 Summary

In this chapter, literatures were reviewed on the topic. It has specifically focused on students' performance, factors influencing student performance, teaching methods, types of teaching methods their advantages and disadvantages are also discussed. The reviewed has focused on two-dimensional media, types of the two-dimensional media, procedure for their application in teaching, their advantages and disadvantages are

alsodiscussed. The chapter has further examined the conventional teaching methods their types, procedure for their applications and their advantages and disadvantages.

The review has however cited the study among the current literature in instruction technology. The review also indicate that two dimensional media when utilized effectively by the teachers in the instructional process enhance students' performance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the research design employed in the study. Included, also are population, sample and sampling technique, instrumentation, pilot testing, validity and reliability of instrument. Others are administration of the instrument, methods for data presentation and analysis.

3.2 Research Design

The research design adopted for the study was quasi-experimental design using pre-test andpost-test control groups.The pre-test and post-test control group design was used to find out students' performance using two-dimensional media and conventional methods in teaching agricultural science in the selected secondary schools. The design employed is represented thus:

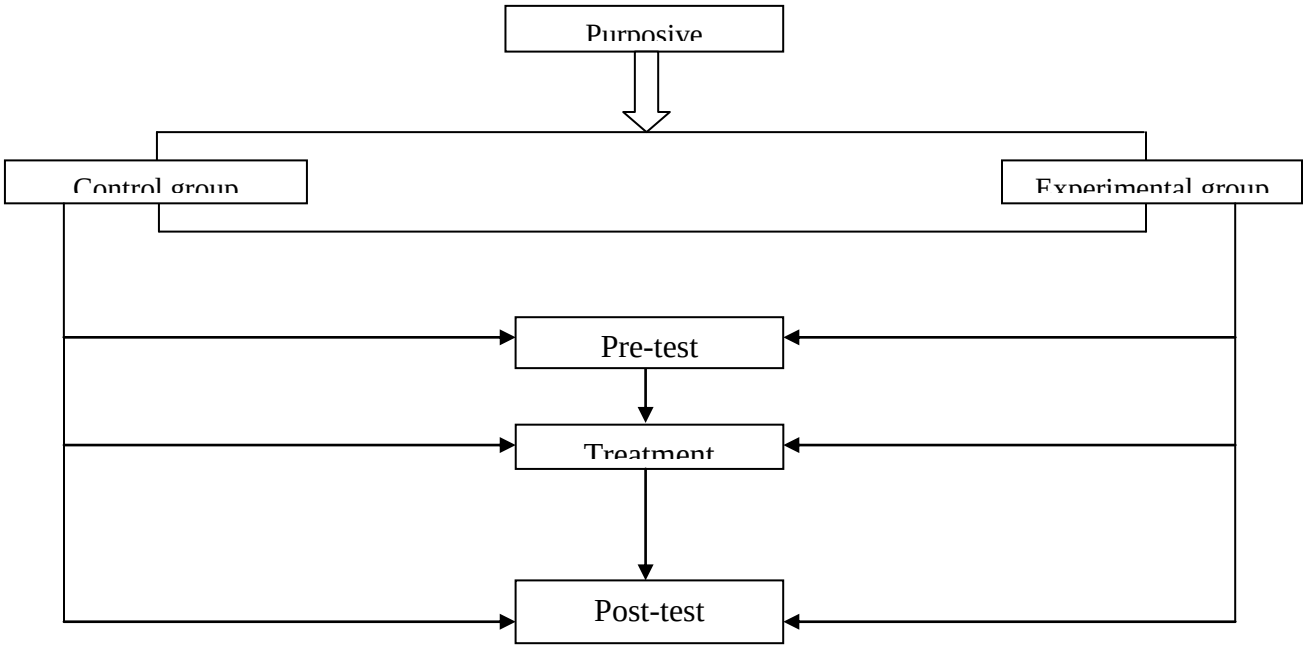


Figure 3.1 a schematic representation of quasi-experimental design.

According to the above design, there would be two groups: experimental group and control group. The experimental group receivedpre-test and the researcher keep the record, then treatment stage with two dimensional media, then post- test followed, using two-dimensional media academic performance test (TDMAPT) developed by the researcher.. The control group which arealso treated with conventional teaching method received pretest and post test.

3.3 Population of the study

The population of this study consists of the whole Senior Secondary School students,from twenty-four Government Secondary schools in Zaria Local Government Area of Kaduna State. In all there are eighteen thousand, one hundred and thirty eight (18,138) students (Kaduna state ministry of Education, 2014). All the schools in the area operate a common curriculum with the exception of Commercial College and Senior Islamic and Arabic SecondarySchool Karau-Karau (SIASS). The table 3.1captures the population of the study.

Table 3.1: Population of the study

SCHOOLS	NO OF MALES	NO OF FEMALES	TOTAL
A	1301	-	1301
B	1300	-	1300
C	131	17	148
D	409	87	496
E	648	153	801
F	116	6	122
G	247	100	347
H	421	495	916
I	-	455	455
J	-	1450	1450
K	370	410	780
L	-	545	545
M	-	738	738
N	1211	-	1211
O	503	-	503
P	-	661	661
Q	850	-	850
R	430	331	761
S	571	392	963
T	48	-	48
U	292	-	292
V	450	350	800
W	1250	-	1250
X	1400	-	1400
TOTAL			**18138**

Source: Ministry of Education, Kaduna State, Zonal Inspectorate Division Zaria (2014).

3.4 Sample and Sampling Technique

Stratified random sampling was adopted in selecting the four schools, two from the urban and another two from the rural areas.Simple random sampling technique was adaptedKerlinger (1973) in selecting one hundred (100) students for the research, twenty five from each school.in Zaria Education Zone. These wereAlhudahuda College and GSS TudunJukun,in urban, and GSS Yakasai and GSS Tudun Saibu.

Table 3.2Sample of the Study

Name of samplegroup	Experimental Groups	Control Groups	
1, Urban Area	GSS A (25) Students	GC H (25) Students	50
2,Rural Area	GSS X (25) Students	GSS K(25) Students	50
TOTAL			**100**

3.5 Instrumentation

Oneinstrument was used for data collection in this study.Two-dimensional mediaAcademic Performance Test (TDMAPT).The Instrument,(TDMAPT)was used for pre-test and post-test. The Two-Dimensional Media Academic Performance test (TDMAPT) was based on thecurrent topic of the term which include simple farm tools, farm machinery and implement and survey and planning of farm stead, The (TDMAPT)contained twenty items which consist of multiple choice, fill in the blank, and true or false(AppendixIII).The students are instructed to fill in the blank spaces provided in the question and to circle the correct option respectively.

3.6Validity of the instrument

Validation of the test refers to the degree to which the test measures what it is supposed to measure. Content validity was used in validating the Two-dimensional Media Academic Performance Test (TDMAPT) items and was validated by panel of:

(a) Expert in faculty of Education Ahmadu Bello University Zaria.

(b) Agricultural science teachers with at least five years of teaching experience.

The panel studied the items objectively. This involved looking into the consistency between the test and the content of the study topics. Copy of the draft was given to each of them, whom rated the questions and ensure their appropriateness for the class, age level, simplicity of expression for the students, the level of students' for which is intended and to check for possible errors in the suggested answers.

3.7 Pilot Testing

The instrument for the study TDMAPT was pilot tested using the SS2 students of two schools within the study area but are not part of the sample for the study. The instrument was administered twice within an interval of two weeks to twenty five students in each of the school. The pilot study was done to;

(a) Determine the appropriateness of the length of time required to take the test;

(b) Determine the appropriateness of the wordings of the TDMAPT and to;

(c) Find the reliability of TDMAPT.

3.8Reliability of the instrument

A pilot study was carried out to determine the reliability co-efficient of students' Two-dimensional Media Academic Performance Test (TDMAPT).

Reliability refers to the consistency of measurement that is expressed as a correlation coefficient. It indicates the degree to which an instrument is consistent in measuring whatever it measures Kerlinger (1973). To establish reliability for the instrument test re-test reliability methods was employed. Two schools were randomly selected and twenty students from each school were randomly selected which are within the population of the study but are not parts of the schools randomly selected for the research. The pilot schools are GSS Dinya represents rural area and GSS Dakace represents urban areas .The test items contained appropriate instructions on how to answer the questions which was selected from Comprehensive Agricultural Science textbook for senior secondary schools, and the pilot schools' standard grade was adopted for scoring.

The reliability co-efficient of the test re-test scores was computed by means of person product moment correlation coefficient (PPMCC) and reliability co-efficient of 0.82 (see Appendix V) was obtained. This formula was used to ascertain if there is any correlation between the first and the second test of the study sample. After the pilot test, all the necessary corrections were made. Items which are found not properly responded are be modified.

3.9 Procedure for Data Collection

The administration of the instrument is referred to as application of the research tool (TDMAPT) on the respondents in their respective schools. The procedure which involved in carrying out the experiment are as follows in four stages:

Stage one

Permission were sought out from the authorities of the schools involved for the use of theirstudents and their time. Secondly, permission were sought to use a lesson period twice (double period) for a period of four weeks in the experimental schools. In each of the schools stratified randomly selected, the researcher tried to familiarize with the career masters/counselors of the schools for their support and assistance in the study.

Stage two

The two groups of the respondent that is the experimental and the control groups were given an instrument to respond to as pre-test. The pre-test of the two groups were conducted for the purpose of comparison their academic performance and their entry behavior in the Agricultural science subject.

Stage three

The experimental groups of both urban and rural were exposed to treatment. That is learning with Two-dimensional media object, in which the researcher, who was an instructor, tailored his teaching strategies to student responses and encourages students to analyze, see,interpret, and predict information. The researcher also relied heavily on open-ended questions and promotes extensive dialogue among students. While the control groups of urban and rural areas received their lesson with conventional method by the researcher anddelivered the lessons by the conventional lecture method which of course, is

a teacher centered method. Verbal presentations and note given strategy was adopted during each of the instructional delivery. The duration of the lesson of both experimental and control groups in the urban and rural schools last for four weeks. Then later the control groups of urban and rural schools received treatments with Two-dimensional media object for four weeks too, that became necessary in other to avoid bias in carried out the treatment and also to answered research questions mentioned in 1.4, chapter. The topics for the instructions were extracted from the syllabus of SS2 class. The whole Treatment period covered eight weeks.

Lesson plan

Sequential lessons plan were developed by the researcher for used during treatment (appendix A and B). The lesson plan for each lesson was prepared. The topic was broken into achievable behavioral objectives. The lesson plan was given to Agricultural Science teachers and experienced classroom teachers for validation in order to examined the;

a) Clarity and appropriateness of the lesson objectives.

b) Conformity of the instructional method and appropriateness of the instructional materials.

Stage four

After completion of the treatment on experimental and control groups, post-test was administered by the researcher. The students' of both the experimental and control groups wrote post-test on TDMAPT. The test instrument contained 20 items which consist of multiple choice, fill in the blank and true or false (Appendix III). Each of the test items had

four response options. Students' were asked to circle only the correct alternative from the options provided.

During administrating the instrument, the researcher and his assistance distributes the TDMAPT to the students' instructs them to read the written instructions thoroughly before attempting to answer the questions. Any additional information was given to the students' prior to the commencement of the test. That was helped in reducing any unnecessary interruption during conducting the test. At the expiration of the time allocated for the test, the answer scripts was collected, marked, and scored using marking scheme designed by the researcher and validated by the validation panels mentioned in 3.5.1. The students' scores of the two group (experimental and control) were recorded separately which was then used for analysis of the study.

3.10 Data Analysis Technique

The data collected for this study() were used to test the hypotheses and answer the research questions stated in section 1.4 and 1.5 of chapter one, the level of significance for rejection or retention of the stated hypotheses at $p \leq 0.05$. The significant differences between the mean scores of the experimental and control group of both rural and urban students were analyzed using paired sample t-test statistical tool. While to answer research questions 1,2,3 and 4 mean and standard deviation were used. Both hypotheses and the research questions were computed using SPSS software.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter contains analysis, interpretation and discussion of the results. The data for this study were analyzed through paired sample t-test (Adana, 1996) and statistical package for social science (SPSS). The data were generated from the pre-test and post-test scores ofacademic performance test (APT) on agricultural science concepts. The mean scores of pre-test and post-test of control and experimental group for both rural and urban students were also computed and compared for significant difference at 0.05 level of significance. The use of this level of significance is considered most valid for studies that are related to Social Science and Education (Best, 1981). This level of significance formed the basis of accepting or rejecting each of the four null hypotheses postulated for the study. Summary of the findings was also presented, the chapter ends with the discussions of the major findings.

4.2 Hypothesis One

There is no significant difference in the mean scores of pre-test and post-test result of students taught agricultural science with two-dimensional media in selected rural secondary schools in Zaria, Kaduna State. The data used for testing this hypothesis are the pre-test and post-test scores of rural experimental group taught agricultural science with two-dimensional media, and was subjected to paired sample t-test. The result is shown in table 4.1

.

Table 4.1PairedSample Mean Scores on Pre-test and Post-test of Experimental Group in Rural Area.

Scores	N	Mean	SD	S.E	T-cal	DF	P-Value	Remark
Pre-test	25	47.0000	10.89725	2.17945	6.016	48	0.000	Significant
Post-test	25	62.5600	6.96467	1.39293				

Based on the above p-value =0.000 at 0.025 level of significance with degree of freedom 48, the t-cal is 6.016 greater than the t-tab 2.021 this shows that there is significant difference in the pre-test and post-test scores of rural student taught agric science with two-dimensional media. It was also observed that the mean scores of pre-test =47 and post-test = 62.56 this also revealed that there is a significant difference in the average performance of the two test. The null hypothesis is hereby rejected. This shows that the use of two-dimensional media enhance the academic performance of experimental group students in rural areapositively.

4.2.2 Hypothesis Two

There is no significant difference in the mean scores of pre-test and post-test result of student taught agricultural science with two-dimensional media in selected urban secondary schools in Zaria, Kaduna State. The data used for testing this hypothesis is the pre-test and post-test scores of urban experimental group taught agricultural science with two-dimensional media, and was subjected to paired sample t-test. The result is shown on table 4.2 below.

Table 4.2 PairedSample Mean Scores on Pre-test and Post-test of Experimental Group in Urban Area.

Scores	N	Mean	SD	S.E	T-cal	DF	P-Value	Remark
Pre-test	25	53.9600	9.15369	1.83074	5.278	48	0.000	Significant
Post-test	25	66.2000	7.11805	1.42361				

Based on the above p-value =0.000 at 0.025 level of significance with degree of freedom 48, the t-cal is 5.278 greater than the t-tab 2.021 this shows that there is significant difference in the pre-test and post-test scores of urban student taught agric science with two-dimensional media. It was also observed that the mean scores of pre-test =53.9 and post-test = 66.2 this also revealed that there is a significant difference in the average performance of the two test. The null hypothesis is hereby rejected. This shows that the use of two-dimensional media enhance the academic performance of experimental group students in urban area positively.

4.2.3 Hypothesis Three

There is no significant difference in the mean scores of pre-test and post-test result of student taught agricultural science with conventional method in selected rural secondary schools in Zaria, Kaduna State. The data used for testing this hypothesis is the pre-test and post-test scores of rural control group taught agricultural science with conventional method, and was subjected to paired sample t-test. The result is shown on table 4.3 below.

Table 4.3Paired Sample Mean Scores on Pre-Test and Post-Test of Control Group in Rural Area.

Scores	N	Mean	SD	S.E	T-cal	DF	P-Value	Remark
Pre-test	25	31.0800	9.66488	1.93298	.000	48	0.000	Not Significant
Post-test	25	31.0800	10.50762	2.10152				

Based on the above table, p- value=0.000< at 0.025 level of significance with DF=48,the t-cal is 0.000 less than the t-tab 2.021. We therefore fail to reject null hypothesis and conclude that there is no significant difference in the performance of students taught Agricultural Science with conventional method in the pre- test and post-test scores in some selected rural secondary school in Zaria, Kaduna state. It was also observed that the mean scores of pre-test =31.08 and post-test =31.08, this also revealed that there is no significant difference in the average performance of the two tests therefore accept the null hypothesis.

4.2.4 Hypothesis Four

There is no significant difference in the mean scores of pre-test and post-test result of student taught agricultural science with conventional method in selected urban secondary schools in Zaria, Kaduna State. The data used for testing this hypothesis is the pre-test and post-test scores of urban control group taught agricultural science with conventional method, and was subjected to paired sample t-test. The result is shown on table 4.3 below.

Table 4.4 PairedSample Mean Scores on Pre-test and Post-test of Control Group in Urban Area.

Scores	N	Mean	SD	S.E	T-cal	DF	P-Value	Remark
Pre-test	25	40.0000	10.00833	2.00167	.096	48	0.000	Not Significant
Post-test	25	40.0000	10.66349	2.13270				

Based on the above table, p- value=0.000 at 0.025 level of significance with DF=48,the t-cal is 0.096 less than the t-tab 2.021. We therefore fail to reject null hypothesis and conclude that there is no significant difference in the performance of students taught Agricultural Science with conventional method in the pre- test and post-test scores in some selected rural secondary school in Zaria, Kaduna state. It was also observed that the mean scores of pre-test =40.00 and post-test =40.28, this also revealed that there is no significant difference in the average performance of the two tests therefore accept the null hypothesis.

4.3 Summary of major findings

From the data collected, analyzed and interpreted the following findings were obtained in the course of this study:

i. There is significant difference in the mean scores of pre-test and post-test result of rural student taught agric science with two-dimensional media in the experimental group. This shows that the use of two-dimensional in teaching improves students' performance in the rural area of Zaria Zone.

ii. There is significant difference in the mean scores of pre-test and post-test result of urban student taught agric science with two-dimensional media in the experimental group. This shows that the use of two-dimensional in teaching improves students' performance in the urban area of Zaria Zone

iii. The null hypothesis three revealed that that there is no significant difference in the performance of students taught Agricultural Science with conventional method in the pre- test and post-test scores in rural secondary school in Zaria, Zone. This shows that conventional method of teaching does not improves students' performance, as shows in the result in analysis three.

iv. The mean scores of pre-test and post-test result of urban students also shows no significant difference, taught agricultural science using conventional method in urban secondary schools in Zaria Zone, as indicated in analysis four.

4.4Discussions of Major Findings

The data collected and analyzed were based on academic performance of subjects in Agricultural Science. These were analyzed according to the demand of the research questions, hypotheses formulated and the design of the study. The discussions of the results are as follows:

The result from Table 4.1 and table 4.2 shows that there is no significant difference in the mean scores of pre-test and post-test results of students in the experimental group of rural and urban areas of Zaria Zone. The analyses and results of this study showed that the experimental group had higher mean scores than the control group in the post-test. This finding indicates that using two-dimensional media has a positive effect on students' academic performance in Agricultural Science. This implies that the key components found in Two-dimensional media when used during teaching are more effective than the conventional teaching method in enhancing student academic performance.

This finding is in line with the works ofto Seek and Richey (1994) Media utilization is the systemic use of resource for learning. It is the backbone of any successful teaching. Any teaching that is devoid of instructional materials is bound to be in fiasco. A wise saying asserts that, "what I hear I forget, what I see I remember and what I do I understand."

Kindler (1970) maintained that "students remember 10% of what they read, 20% of what hear, 30% 0f what they see, 70% of what they say and 90% of what they hear, say and do. Other scholars like Hagban (1990) and Dela (1992) maintained that audio-visual materials when properly utilized, supply concrete basis for conceptual thinking have high degree of interest for students, make learning more permanent and offer a reality and

variety of experience. Scholars, like Hewkridge (1992) and Packman (1990) had conducted many researches on the effect of instructional television programmed instructions and films on students' performance. As expected the findings shows a positive correlation between the use of these materials and academic performance of student performance. The National Council for Education Technology (1997) asserted that the use of computer in class room teaching has lead to a considerable increase in student performance.

. According to Akinjidi (1997), essential instructional material are not available for use in classrooms and in workshops, learning is made difficult, skills acquisition discouraged and the student are not given adequate motivation through teachings. Consequently, teachers do not impart the knowledge that is relevant to the innovation in the industries for which these students are being prepared. The teacher therefore ends up teaching the history of technical education.

Also the result from Table 4.3 and table 4.4 shows that there is significant difference in the mean scores of pre-test and post-test results of students in control groups of rural and urban areas of Zaria Zone. The analyses and results of this study showed that the control group mean scores shows no significant difference in the post-test result. This findings indicates that using conventional method has less significant effect on students' academic performance in Agricultural Science, compared to two-dimensional media method. This is in line with the idea ofAbinbola (2009), conventional teaching method like lecture method has disadvantages. According to him it is a good strategy for teaching large classes especially these days of large enrolment of students in the class. Even though he pointed out that conventional teaching, method does not take care of individual differences, as it a

poor strategy for teaching poor ability students who may not be able to follow simple logical reasoning.

AlsoFafunwa (1974), said conventional teaching method is a rigid system in the sense that it is not easily adopted to change. The same body of experience is passed from generation to generation without critical appraisal. These findings also gears in line with the work of Majasan (1974) who observed that conventional method of teaching tend to be closed system; anti scientific that is anything novel is mysterious, either to be feared or worshiped. Scientific innovations, machines etc admiration and awe.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the research work the conclusion drawn from the findings of the study, the recommendations and suggestion for further studies.

5.2 Summary

This study was aimed at the analysis of students' performance using two dimensional media and conversional methods in teaching agricultural science in secondary schools in Zaria Educational Zone, Kaduna State. The study began with introduction, where the background to the study and statement of problem were highlighted. This was followed by the objectives of the study, research questions, null hypotheses, significance of the study, basic assumptions and scope of the study.

The review of related literature was carried out. The review focused on the following: conceptual framework, meaning of performance, meaning of two dimensional media, meaning of conventional method, meaning of teaching, using two dimensional media in teaching, students' performance in Agricultural Science in rural schools, students performance in Agricultural Science in urban schools and empirical studies.

The research design used for this study was quasi-experimental design using pre-test, post-test. A sample of 100 students was purposively selected for the study, from the population of Eighteen Thousand One Hundred And Thirty Eight (18,138) in Twenty Four Government Senior Secondary Schools in Zaria Education Zone, Kaduna State. The instruments used for generating the data were Academic Performance Test (APT) for both

experimental and control group. The data analysis was done using t-test to analyze the hypothesis while the mean and standard deviation were used in computing the research questions. Statistical Package for Social Science (SPSS) was used in analyzing the data.

The analysis and the interpretation of data confirmed some components of the theoretical work as highlighted in the literature review. The finding revealed that null hypothesis one and two were rejected on the experimental group while null hypothesis three and four were accepted on the control groups. The study also revealed that effective utilization of two-dimensional media in teaching enhances student's academic performance.

5.3 Conclusions

Based on the results of the findings from this study, the following conclusions were made.

1. Education media are very strong and powerful determinants in enhancing and improving student's academic performance.
2. The study found that the use of two-dimensional media in teaching agricultural science have significant positive impact on students academic performance.
3. The study also shows that lack of instructional media in teaching lowers the academic performance of students. This evidence was clearly seen in the result of the control groups of the study.

Effective use of instructional media or two-dimensional media in the study shows that, the student were able to see, interact or make direct contact with objects or tools used in learning the subject matter instead of merely hearing about them. The findings and conclusion of this study can therefore be said to have emphasized on the importance of two-dimensional media on students academic performance.

5.4 Recommendations

In the light of the insights of the study and conclusion drawn, the following recommendations are made:

i. The study indicate that the use of two-dimensional media in teaching improves students academic performance and it is therefore, recommended for use in learning agricultural science.

ii. It is recommended that curriculum planners and teachers should include the use of two-dimensional media in teaching and learning activities.

iii. Text books writers should also integrate two-dimensional media inform of pictures and drawings clearly in the agricultural text books, so that, students and teachers will have clear picture and idea of the subject matter.

iv. It is also recommended that conventional teaching methods in secondary schools should be discouraged as it has no positive impact on students' academic performance as indicated in the findings of the study.

5.5 Limitation of the Study

The following were the limitation of this study:

i. The sample used for this study was limited to only four schools out of twenty for secondary schools within Zaria Education Zone, in Kaduna State. The study was also limited to identification of simple farm tools and their uses, farm machineries implements and maintenance. This therefore, limited the study and generalization not to be made to other concepts isn agricultural science.

ii. The educational media was also limited to tow-dimensional media and this limited the study to other types of educational media that are used in the agric science lessons.

5.6 Suggestions for further Studies

From the findings of this study, due to the nature of the research design, financial and time constraints the following recommendations are proposed for further research and studies in these areas:

i. That the same study could be carried out in agric science, concept but using more schools in the same of different areas of the study to be able to generalize the findings.

ii. The effect of two dimensional media on the academic performance of students in other subjects could be reached in Junior Secondary School, primary schools or even higher institutions of learning.

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APPENDIX (I)

LESSON NOTE FOR EXPERIMENTAL GROUP

(RURAL)

Lesson I

School: GSS Yakasai, Zaria

Class: SS I

Subject: Agricultural Science

Topics: Simple Farm Tools

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson students should be able to:

- Define simple farm tools
- Identify and state the uses of different types of farm tools
- Mention different ways of simple farm tools maintenance

Instructional Materials:

Pictures, drawings, posters and charts carrying different types of simple farm tools.

Real objects like hoes, cutlass, rake, hand forks and sickle are also presented.

Introduction:

The teacher introduces his lesson by asking the students questions on simple farm tools and their uses. Example:

- What are simple farm tools?
- List and explain the uses of the various types of simple farm tools.
- How can we maintain these tools?

The students explain these questions and the teacher leads the explanation.

Previous knowledge:

The students had some knowledge on simple farm tools from their junior secondary school level.

They had been seeing how people make us of simple farm tools in their farms.

Presentations:

The Teacher define simple farm tools as commonly used tools by small farmers for simple farm operations.

The Teacher presents pictures of some simple farm tools and the real objects like cutlers, sickle, hoe, hand fork etc.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define simple hand tools. List and explain the various functions of simple farm tools. How do we maintained our farm tools?

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of farm tools used in the farm.

Conclusion:

The students are expected to take note of key concepts.

Givevarios uses of the simple farm tools

Explain the various ways of maintaining the simple farm tools.

Lesson II

School: GSS Yakasai, Zaria

Class: SS I

Subject: Agricultural Science

Topics: Farm Machinery and Implements

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson, students should be able to:

- Define farm Machinery and Implements
- Mention different types of machines and implements.
- States the functions of tractors and bulldozer

Instructional Materials:

Pictures, drawings, posters and charts carrying different types of farm machines and implements

Previous lesson:

Students learnt simple farm tools and their uses.

Introduction:

The teacher introduces his lesson by asking the students questions based on their previous lesson

Previous knowledge:

The students had some knowledge on simple farm tools from their junior secondary school level.

They had been seeing how people make us of simple farm tools in their farms.

Presentations:

The Teacher definefarm machinery and implements.

The teacher mention the different types of machine/Implement, and their uses.

The Teacher presents pictures of some farm machinery and implement like Bulldozer, Tractor plough etc.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define farm machinery and imlement. List and explain the various types of farm machinery /implement and their uses.

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of farm machines and implements.

Conclusion:

The students are expected to take note of key concepts.

Explain the uses of farm machinery and implement.

LessonIII

School:GSSYakasai

Class: SS I

Subject: Agricultural Science

Topics: Surveying and Planing of farmstead

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson, students should be able to:

- Define Surveying and planning of farmstead
- List some of the equipment used in surveying and their uses.
- Mention some of the importance of surveying and planning of farmstead.

Instructional Materials:

Pictures, drawings, posters and charts carrying different types of surveying equipment

Previous lesson:

Students learnt farm machinery and implement.

Introduction:

The teacher introduces his lesson by asking the students questions based on their previous lesson

Previous knowledge:

The students had some knowledge on farmmachinery and implement.

Presentations:

The Teacher define the meaning of surveying and planning of farmstead.

The teacher list some of the equipment used in surveying and planning of farmstead.

The Teacher presents pictures of some surveying equipment. E.g. prismatic compass, measuring tape, ranging pole, arrows etc.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define farm surveying, list defferents types of surveying equipment and their uses.

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of surveying equipment.

Conclusion:

The students are expected to take note of key concepts.

Explain the uses of surveying and planning.

URBAN

School: TudunJukun

Class: SS I

Subject: Agricultural Science

Topics: Simple Farm Tools

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson students should be able to:

- Define simple farm tools
- Identify and state the uses of different types of farm tools
- Mention different ways of simple farm tools maintenance

Instructional Materials:

Pictures, drawings, posters and charts carrying different types of simple farm tools.

Real objects like hoes, cutlass, rake, hand forks and sickle are also presented.

Introduction:

The teacher introduces his lesson by asking the students questions on simple farm tools and their uses. Example:

- What are simple farm tools?
- List and explain the uses of the various types of simple farm tools.
- How can we maintain these tools?

The students explain these questions and the teacher leads the explanation.

Previous knowledge:

The students had some knowledge on simple farm tools from their junior secondary school level.

They had been seeing how people make us of simple farm tools in their farms.

Presentations:

The Teacher define simple farm tools as commonly used tools by small farmers for simple farm operations.

The Teacher presents pictures of some simple farm tools and the real objects like cutlers, sickle, hoe, hand fork etc.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define simple hand tools. List and explain the various functions of simple farm tools. How do we maintained our farm tools?

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of farm tools used in the farm.

Conclusion:

The students are expected to take note of key concepts.

Givevarios uses of the simple farm tools

Explain the various ways of maintaining the simple farm tools.

School:GSSTudunJukun

Class: SS I

Subject: Agricultural Science

Topics: Farm Machinery and Implements

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson, students should be able to:

- Define farm Machinery and Implements
- Mention different types of machines and implements.
- States the functions of tractors and bulldozer

Instructional Materials:

Pictures, drawings, posters and charts carrying different types of farm machines and implements

Previous lesson:

Students learnt simple farm tools and their uses.

Introduction:

The teacher introduces his lesson by asking the students questions based on their previous lesson

Previous knowledge:

The students had some knowledge on simple farm tools from their junior secondary school level.

They had been seeing how people make us of simple farm tools in their farms.

Presentations:

The Teacher define farm machinery and implements.

The teacher mention the different types of machine/Implement, and their uses.

The Teacher presents pictures of some farm machinery and implement like Bulldozer, Tractor plough etc.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define farm machinery and imlement. List and explain the various types of farm machinery /implement and their uses.

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of farm machines and implements.

Conclusion:

The students are expected to take note of key concepts.

Explain the uses of farm machinery and implement.

School:GSSTudunJukun

Class: SS I

Subject: Agricultural Science

Topics: Surveying and Planing of farmstead

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson, students should be able to:

- Define Surveying and planning of farmstead
- List some of the equipment used in surveying and their uses.
- Mention some of the importance of surveying and planning of farmstead.

Instructional Materials:

Pictures, drawings, posters and charts carrying different types of surveying equipment

Previous lesson:

Students learnt farm machinery and implement.

Introduction:

The teacher introduces his lesson by asking the students questions based on their previous lesson

Previous knowledge:

The students had some knowledge on farm machinery and implement.

Presentations:

The Teacher define the meaning of surveying and planning of farmstead.

The teacher list some of the equipment used in surveying and planning of farmstead.

The Teacher presents pictures of some surveying equipment. E.g. prismatic compass, measuring tape, ranging pole, arrows etc.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define farm surveying, list defferents types of surveying equipment and their uses.

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of surveying equipment.

Conclusion:

The students are expected to take note of key concepts.

Explain the uses of surveying and planning.

APPENDIX II

LESSON NOTE FOR CONTROL GROUP

(RURAL)

Lesson I

School: GSS Tudun Saibu, Zaria

Class: SS I

Subject: Agricultural Science

Topics: Simple Farm Tools

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson students should be able to:

- Define simple farm tools
- Identify and state the uses of different types of farm tools
- Mention different ways of simple farm tools maintenance

Instructional Materials:

Chalk and Chalkboard.

Introduction:

The teacher introduces his lesson by asking the students questions on simple farm tools and their uses. Example:

- What are simple farm tools?
- List and explain the uses of the various types of simple farm tools.
- How can we maintain these tools?

The students explain these questions and the teacher leads the explanation.

Previous knowledge:

The students had some knowledge on simple farm tools from their junior secondary school level.

They had been seeing how people make us of simple farm tools in their farms.

Presentations:

The Teacher defined simple farm tools as commonly used tools by small farmers for simple farm operations.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define simple hand tools. List and explain the various functions of simple farm tools. How do we maintained our farm tools?

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of farm tools used in the farm.

Conclusion:

The students are expected to take note of key concepts.

Givevarios uses of the simple farm tools

Explain the various ways of maintaining the simple farm tools.

Lesson II

School: GSS Tudun Saibu, Zaria

Class: SS I

Subject: Agricultural Science

Topics: Farm Machinery and Implements

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson, students should be able to:

- Define farm Machinery and Implements
- Mention different types of machines and implements.
- States the functions of tractors and bulldozer

Instructional Materials:

Chalk and Chalkboard

Previous lesson:

Students learnt simple farm tools and their uses.

Introduction:

The teacher introduces his lesson by asking the students questions based on their previous lesson

Previous knowledge:

The students had some knowledge on simple farm tools from their junior secondary school level.

They had been seeing how people make us of simple farm tools in their farms.

Presentations:

The Teacher define farm machinery and implements.

The teacher mention the different types of machine/Implement, and their uses.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define farm machinery and imlement. List and explain the various types of farm machinery /implement and their uses.

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of farm machines and implements.

Conclusion:

The students are expected to take note of key concepts.

Explain the uses of farm machinery and implement.

Lesson III

School:GSSTudun Saibu

Class: SS I

Subject: Agricultural Science

Topics: Surveying and Planning of farmstead

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson, students should be able to:

- Define Surveying and planning of farmstead
- List some of the equipment used in surveying and their uses.
- Mention some of the importance of surveying and planning of farmstead.

Instructional Materials:

Chalk and Chalkboard.

Previous lesson:

Students learnt farm machinery and implement.

Introduction:

The teacher introduces his lesson by asking the students questions based on their previous lesson .

Previous knowledge:

The students had some knowledge on farm machinery and implement.

Presentations:

The Teacher define the meaning of surveying and planning of farmstead.

The teacher list some of the equipment used in surveying and planning of farmstead.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define farm surveying, list defferents types of surveying equipment and their uses.

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of surveying equipment.

Conclusion:

The students are expected to take note of key concepts.

Explain the uses of surveying and planning.

URBAN GRUOP

School: Alhudahuda College, Zaria

Class: SS I

Subject: Agricultural Science

Topics: Simple Farm Tools

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson students should be able to:

- Define simple farm tools
- Identify and state the uses of different types of farm tools
- Mention different ways of simple farm tools maintenance

Instructional Materials:

Chalk and Chalkboard

Introduction:

The teacher introduces his lesson by asking the students questions on simple farm tools and their uses. Example:

- What are simple farm tools?
- List and explain the uses of the various types of simple farm tools.
- How can we maintain these tools?

The students explain these questions and the teacher leads the explanation.

Previous knowledge:

The students had some knowledge on simple farm tools from their junior secondary school level.

They had been seeing how people make us of simple farm tools in their farms.

Presentations:

The Teacher define simple farm tools as commonly used tools by small farmers for simple farm operations.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define simple hand tools. List and explain the various functions of simple farm tools. How do we maintained our farm tools?

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of farm tools used in the farm.

Conclusion:

The students are expected to take note of key concepts.

Givevarios uses of the simple farm tools

Explain the various ways of mainta/ining the simple farm tools.

School:AlhudahudaCollege,Zaria

Class: SS I

Subject: Agricultural Science

Topics: Farm Machinery and Implements

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson, students should be able to:

- Define farm Machinery and Implements
- Mention different types of machines and implements.
- States the functions of tractors and bulldozer

Instructional Materials:

Chalk and Chalkboard

Previous lesson:

Students learnt simple farm tools and their uses.

Introduction:

The teacher introduces his lesson by asking the students questions based on their previous lesson

Previous knowledge:

The students had some knowledge on simple farm tools from their junior secondary school level.

They had been seeing how people make us of simple farm tools in their farms.

Presentations:

The Teacher define farm machinery and implements.

The teacher mention the different types of machine/Implement, and their uses.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define farm machinery and imlement. List and explain the various types of farm machinery /implement and their uses.

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of farm machines and implements.

Conclusion:

The students are expected to take note of key concepts.

Explain the uses of farm machinery and implement.

School:AlhudahudaCollege,Zaria

Class: SS I

Subject: Agricultural Science

Topics: Surveying and Planing of farmstead

Duration: 40 Minutes

Behavioral Objectives: By the end of the lesson, students should be able to:

- Define Surveying and planning of farmstead
- List some of the equipment used in surveying and their uses.
- Mention some of the importance of surveying and planning of farmstead.

Instructional Materials:

Chalk and Chalkboard

Previous lesson:

Students learnt farm machinery and implement.

Introduction:

The teacher introduces his lesson by asking the students questions based on their previous lesson

Previous knowledge:

The students had some knowledge on farm machinery and implement.

Presentations:

The Teacher define the meaning of surveying and planning of farmstead.

The teacher list some of the equipment used in surveying and planning of farmstead.

Evaluation:

The teacher evaluates his lesson by asking the students questions on the topic treated. Example, define farm surveying, list defferents types of surveying equipment and their uses.

Summary:

The teacher define, list, and explain the uses and maitainance of differents types of surveying equipment.

Conclusion:

The students are expected to take note of key concepts.

Explain the uses of surveying and planning.

APPENDIX III

TWO DIMENSIONAL MEDIA TEST ITEMS

(1) The best implement used for transplanting is;

(a) Hand fork (b) Hand trowel

(c) Cutlass (d) Axe

(2) Farm machinery could be defined as;

(a) The machines used in garden only

(b) The difference types of machines and implement used in the farm

(c)The machine and implement used in the construction of houses

(d) The machine design for the spraying agro chemicals

(3) One of the following is NOT a way of maintaining farm tools;

(a) They should not be exposed to sun or rain

(b) Tools should not be left lying about in the farm

(C) Tools should be rub with water to prevent rusting

(d) Blunt cutting edge should be sharpened

(4) Plough is …….

(a) Secondary tillage implement

(b) Nursery tillage implements

(c) Primary tillage implements

(d) All of the above

(5)……is a secondary tillage implement

(a) Disc plough

(b) Harrow

(c) mould board plough

(d) Tractor

(6) …….is a powerful multi -purpose vehicle used in the farm

(a) Hoe (b) incubator

(c) discridger (d) Tractor

(7) Because of it heavy weight, it destroys soil structure. This is one of the disadvantages Of …….

(a)Tractor (b) bulldozer

(c) Machines (d) tree puller.

(8) Tractor is used to pull farm implements. Like plough, harrow, and ridger

TRUE\FALSE

(9) Rake is used in harvesting of root crops like cassava, yam and potatoes

TRUE\FALSE

(10) Incubator is an instrument used for hatching eggs

TRUE\FALSE

(11)One of the following is NOT surveying equipment

(a) Shovel (b) Gunters' chain

(c) Prismatic compass (d) Ranging pole

(12)The tools used for marking stations in farm surveying is

(a) An arrow (b) chain

(c) Gunter's chain (d) measuring tape

(13) Günter's chain is approximately…..meters long

(a) 50 meters long (b) 25 meters long

(c) 30 meters long (d) 20 meters long

(14) One of the following is used in taking bearings and in measuring angular distance

(a) Theodolite (b) Prismatic compass

(C) Pillar (d) measuring tape

(15) Theodolite is used in measuring horizontal and vertical distance

TRUE\FALSE

(16) The process of measuring and mapping out the position, height, size, and boundary

of an area of farm land is ……

(a) Market surveying (b) Faming operation

(c) Farm mechanization (d) farm surveying

(17) The drawing or outlining of farmstead and the arrangement of land for proper usage

Without the risk of land degradation is…….

(a) Farm surveying (b) farmstead

(c) farm planning (d) farming operations

(18) One of the following is NOT a source of farm power used in the farm

(a)Human power (b) Animal power

(c) wind power (d) soil power

(19) Farm surveying and planning, help the farmer to know the size or hectare of farm

land.

TRUE\FALSE

(20) Beacon or pillar is constructed from cement block in rectangular shapes

TRUE\FALSE

APPENDIX IV

MARKING SCHEME FOR DATA COLLECTION

1.A	2.B	3.C	4.C	5.B
6.D	7.B	8.TRUE	9.FALSE	10.TRUE
11.A	12.A	13.D	14.B	15.TRUE
16.D	17.C	18.D	19.TRUE	20.TRUE

APPENDIX V

PILOT TESTING RESULT ON (TDMAPT)

S\N	1st TEST(x)	2nd TEST(y)	(X)	(Y)	X^2	Y^2	∑(XY)
1	35	45	-2	-10	4	100	20
2	37	50	0	-5	0	25	0
3	29	49	-8	-6	64	36	48
4	40	60	3	5	9	25	15
5	45	55	8	0	64	0	0
6	33	53	-4	-2	16	4	8
7	25	47	-12	-8	144	64	96
8	33	57	-4	2	16	4	8
9	50	65	13	10	169	100	130
10	19	40	-18	-15	324	225	270
11	29	49	-8	-6	64	36	48
12	50	53	13	-2	169	4	26
13	25	65	-12	10	144	100	120
14	47	60	10	5	100	25	50

15	39	59	2	4	4	16	8
16	44	54	7	-1	49	1	-7
17	51	61	14	6	196	36	84
18	43	63	6	8	36	64	48
19	37	57	0	2	0	4	0
20	20	50	-17	-5	289	25	85
	N=20	N = 20			1861	894	1057

C = 731/20=37 D= 1092/20=55

$\sum X^2$=1861 1861/19 = 97.9 $\sqrt{}$ 97.9 = 9.89

$\sum Y^2$=894 894/19=47.05 $\sqrt{}$ 47.05 = 6.8

$\sum(XY)$ = 1057 1057/19=55.63

r = 55.63/(9.89)(6.8) = 0.82

Where;

$r = \sum(XY)/\sqrt{\sum(X^2)(Y^2)}$

r = PPMCC

$\sum(XY)$ = (x-C)(y-D) = Covariance of 1st and 2nd of the Students' Scores.

$\sqrt{\sum(X^2)(Y^2)}$ = (x-C)(y-D) = Square root of the squared of both scores.

APPENDIX VI

SIMPLE FARM TOOLS



WHEEL BARROW



AXE



HOE



SICKLE



RAKE



CUTLASS



SPRAYER

APPENDIX VII

FARM MACHINERY AND IMPLEMENTS



TRACTOR



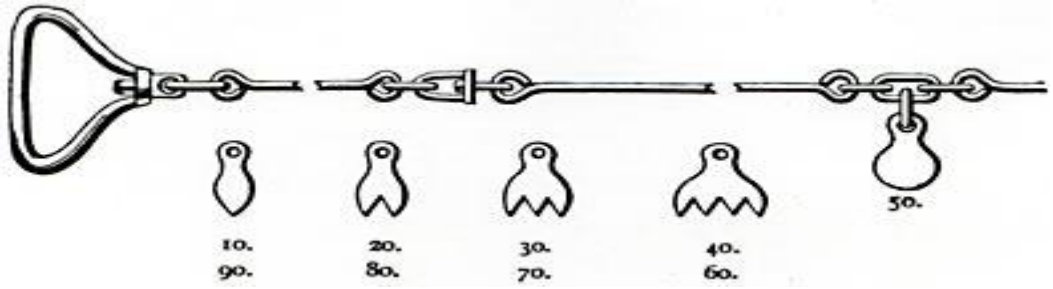
BULLDOZER



PLOUGH

APPENDIX VIII

SURVEYING EQUIPMENTS



GUNTER'S CHAIN



RANGING POLE



COMPASS



THEODOLITE



MEASURING TAPE

Table 4.1.1 Test-Retest Scores of Rural Students in the Experimental Group

S/N	TEST	RE TEST
1	35	55
2	37	57
3	29	59
4	40	67
5	45	57
6	33	60
7	25	59
8	40	61
9	50	55
10	47	57
11	51	59
12	53	70
13	57	71
14	60	75
15	65	69
16	45	65
17	70	75
18	55	62
19	43	57
20	48	57
21	49	63
22	51	60
23	39	50
24	49	71
25	59	73

Table 4.1.2Test Retest Scores of Urban Students in The Experimental Group

S/N	TEST	RE TEST
1	50	59
2	49	55
3	52	65
4	57	67
5	45	57
6	60	69
7	65	75
8	50	65
9	55	70
10	59	71
11	66	73
12	63	70
13	73	79
14	70	75
15	54	65
16	39	57
17	40	60
18	47	61
19	48	58
20	41	61
21	43	55
22	53	75
23	55	71
24	55	69
25	60	73

Table 4.1.3 Test Retest Scores of Rural Students in The Control Group

S/N	TEST	RE TEST
1	23	22
2	25	25
3	31	29
4	29	30
5	19	21
6	15	17
7	17	17
8	20	15
9	25	20
10	39	40
11	41	41
12	33	32
13	50	51
14	45	47
15	42	45
16	30	29
17	27	27
18	41	40
19	35	37
20	32	35
21	19	17
22	25	26
23	31	30
24	40	40
25	43	44

Table 4.1.4 Test Retest Scores of Urban Students in the Control Group

S/N	TEST	RE TEST
1	35	36
2	39	40
3	34	29
4	32	29
5	30	29
6	31	30
7	37	35
8	36	36
9	33	34
10	41	42
11	38	39
12	45	45
13	50	50
14	41	50
15	43	45
16	51	50
17	55	58
18	33	31
19	29	30
20	51	50
21	54	55
22	53	53
23	60	60
4	24	25
25	25	26